

What is claimed is:

- 5 1. Apparatus for electron radiography of an object comprising:
a source of electrons;
diffuser means receiving said electrons for diffusing said electrons;
first matching quadrupoles receiving said diffused electrons for focusing
said diffused electrons prior to said diffused electrons entering said object
10 placed in the path of said diffused electrons;
first imaging quadrupoles receiving said focused diffused electrons
after said focused diffused electrons have been scattered by said object for
focusing said scattered electrons;
first collimator means receiving said scattered electrons for removing
15 electrons that have scattered to large angles;
second imaging quadrupoles receiving said collimated scattered electrons
for refocusing said collimated scattered electrons and mapping said focused
collimated scattered electrons to transverse locations on an image plane
representative of said electrons' positions in said object.
2. The apparatus as described in Claim 1 wherein said source of
electrons provides electrons having an energy of approximately 20 MeV.
3. The apparatus as described in Claim 1 wherein said object is located
in a vacuum chamber.
4. The apparatus as described in Claim 1 wherein said first collimator is
located in a vacuum chamber.
5. The apparatus as described in Claim 1, further comprising a second
collimator receiving said electrons and collimating said electrons before said
electrons enter said diffuser means.

6. The apparatus as described in Claim 1, further comprising magnification means for magnifying said mapping of said focused collimated scattered electrons.